

THE CLAIMS

What is claimed is:

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1. A system for central management, storage and report generation of remotely captured paper transactions from documents and receipts comprising:

one or more remote data access subsystems for capturing and sending paper transaction data comprising at least one data access controller for managing the capturing and sending of the transaction data;

15 at least one central data processing subsystem for processing, sending, verifying and storing the paper transaction data comprising a data management subsystem for managing the processing, sending and storing of the transaction data; and

20 at least one communication network for the transmission of the transaction data within and between said one or more data access subsystems and said at least one data processing subsystem.

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2. A system as in claim 1 wherein said one or more data access subsystems further comprise at least one scanner for capturing the paper transaction data.

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3. A system as in claim 2 wherein said one or more data access subsystems also capture electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, further comprising:

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at least one card interface for capturing the electronic transaction data;

at least one signature interface for capturing an electronic signature; and

at least one biometric interface for capturing biometric data.

10 4. A system as in claim 3 wherein said at least one data access controller successively transforms the captured transaction data to a bitmap image, a compressed bitmap image, an encrypted, compressed bitmap image and an encrypted, compressed bitmap image tagged with
15 information identifying a location and time of the transaction data capture.

5. A system as in claim 4 wherein said one or more
20 data access subsystems further comprise digital storage for storing the tagged, encrypted, compressed bitmap image.

25 6. A system as in claim 5 wherein said at least one card interface initiates the electronic transaction.

7. A system as in claim 6 wherein said one or more
30 data access subsystems further comprise at least one printer for printing the paper transaction initiated by said at least one card interface.

35 8. A system as in claim 7 wherein the paper transaction printed by said at least one printer includes data glyphs.

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9. A system as in claim 1 wherein said data management subsystem of said at least one data processing subsystem comprises:

5 at least one server for polling said one or more remote data access subsystems for transaction data;

a database subsystem for storing the transaction data in a useful form;

10 a report generator for generating reports from the transaction data and providing data to software applications;

at least one central processing unit for managing the storing of the transaction data;

15 a domain name services program for dynamically assigning one of said at least one server to receive portions of the transaction data for balancing the transaction data among said at least one server; and

20 a memory hierarchy.

10. A system as in claim 9 wherein said at least one server also polls for biometric and signature data,
25 said database stores the biometric data and the signature data, and said at least one central processing unit verifies the biometric data and the signature data.

30 11. A system as in claim 9 wherein said memory hierarchy comprises at least one primary memory for storage of recently accessed transaction data and at least one secondary memory for storage of other transaction data.

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12. A system as in claim 11 wherein said at least one secondary memory comprises at least one write once read many jukebox and at least one optical storage jukebox.

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13. A system as in claim 12 wherein said at least one optical storage jukebox comprises read only memory technology including compact disc read only memory form
10 factor metallic write once read many disc.

14. A system as in claim 9 wherein said database subsystem comprises at least one predefined template for
15 partitioning the stored transaction data into panels and identifying locations of the panels.

15. A system as in claim 14 wherein said data
20 processing subsystem further comprises a data entry gateway for correcting errors in the panels of stored transaction data.

25 16. A system as in claim 1 wherein said at least one communication network comprises:

at least one first local area network for transmitting data within a corresponding one of said one
or more remote data access subsystems;
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at least one second local area network for transmitting data within a corresponding one of said at least one data processing subsystem; and

35 at least one wide area network for transmitting data between said one or more remote data access subsystems and said at least one data processing subsystem.

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17. A system as in claim 16 wherein said at least one communication network further comprises:

5 at least one modem for connecting said at least one first local area network of said one or more data access subsystems to a corresponding one of said at least one second local area network of said at least one data processing subsystem through said at least one wide area network; and

10 at least one bank of modems for connecting said at least one second local area network of said at least one data processing subsystem to a corresponding some of said at least one first local area network of said one or more data access subsystems through said at least one wide
15 area network.

18. A system as in claim 1 further comprising at least one data collecting subsystem for collecting and
20 sending the electronic or paper transaction data comprising a further management subsystem for managing the collecting and sending of the transaction data.

25 19. A system as in claim 18 wherein said further data management subsystem of said at least one data collecting subsystem comprises:

30 at least one server for polling said one or more remote data access subsystems for transaction data;

a database for storing the transaction data in a useful form;

35 at least one central processing unit for managing the collecting of the transaction data;

a domain name services program for dynamically assigning one of said at least one server to receive

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portions of the transaction data for balancing the transaction data among said at least one server; and

a memory hierarchy.

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20. A system as in claim 19 wherein said memory hierarchy comprises at least one primary memory for collecting transaction data and at least one secondary memory for backup storage of the transaction data.

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21. A system as in claim 20 wherein said at least one secondary memory comprises at least one DLT jukebox.

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22. A system as in claim 18 wherein said at least one communication network comprises:

at least one first local area network for transmitting data within a corresponding one of said one or more remote data access subsystems;

at least one second local area network for transmitting data within a corresponding one of said at least one data collection subsystem;

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at least one third local area network for transmitting data within a corresponding one of said at least one data processing subsystem; and

at least one wide area network for transmitting data between said one or more remote data access subsystems, said at least one data collection subsystem and said at least one data processing subsystem.

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23. A system as in claim 22 wherein said at least one communication network further comprises:

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at least one first modem for connecting said at
least one first local area network of said one or more
data access subsystems to a corresponding one of said at
least one second local area network through said at least
5 one wide area network;

at least one bank of modems for connecting said at
least one second local area network of said at least one
data collection subsystem to a corresponding some of said
at least one first local area network of said one or more
10 data access subsystems through said at least one wide
area network;

at least one first wide area network router for
connecting a corresponding one of said at least one
15 second local area network of said at least one data
collecting subsystem to said at least one wide area
network; and

at least one second wide area network router for
connecting a corresponding one of said at least one third
20 local area network of said at least one data processing
subsystem to said at least one wide area network.

24. A system as in claim 23 wherein said at least
25 one first wide area network and said at least one second
wide area network comprises a carrier cloud, said carrier
cloud using a frame relay method for transmitting the
'transaction data.

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25. A system as in claim 22 wherein said at least
one second local area network and said at least one third
local area network further comprises a corresponding one
of at least one network switch for routing transaction
35 data within said at least one second local area network
and said at least one third local area network.

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26. A method for central management, storage and verification of remotely captured paper transactions from documents and receipts comprising the steps of:

capturing and sending the paper transaction data at one or more remote locations;

managing the capturing and sending of the transaction data;

collecting, processing, sending and storing the transaction data at a central location;

managing the collecting, processing, sending and storing of the transaction data; and

transmitting the transaction data within and between the remote location(s) and the central location.

27. The method as in claim 26 wherein said managing the capturing and sending step comprises the steps of:

successively transforming the captured transaction data to a bitmap image, a compressed bitmap image, an encrypted, compressed bitmap image and an encrypted, compressed bitmap image tagged with information identifying a location and time of the transaction data capturing; and

storing the tagged, encrypted, compressed bitmap image.

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28. The method as in claim 27 wherein said managing the capturing and sending step also captures electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, further comprising the steps of:

initiating an electronic transaction;

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capturing signature data;
capturing biometric data; and
printing a paper transaction with data glyphs for
5 the initiated electronic transaction.

29. A method as in claim 26 wherein:

10 said capturing and sending step occurs at a
plurality of remote locations; and

said collecting, processing, sending and storing
step occurs at a plurality of central locations.

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30. A method as in claim 29 wherein said
collecting, processing, sending and storing step
comprises the steps of:

20 polling the remote locations for transaction data
with servers at the central locations;

storing the transaction data at the central location
in a memory hierarchy, said storing maintains recently
accessed transaction data in a primary memory and other
25 transaction data in a secondary memory; and

dynamically assigning the servers at the central
location to receive portions of the transaction data for
balancing the transaction data among the servers; and

30 generating reports from the transaction data and
providing data to software applications.

31. A method as in claim 30 wherein said storing
35 the transaction data step comprises the steps of:

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partitioning the stored transaction data with predefined templates into panels; and

identifying locations of the panels.

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32. A method as in claim 31 wherein said managing the collecting, processing, sending and storing of the transaction data step comprises correcting errors in the panels of stored transaction data.

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33. A method as in claim 32 further comprising the steps of:

15 polling the remote locations for captured electronic data, captured signature data and captured biometric data with servers at the central locations; and

20 comparing the captured signature data and the captured biometric data to stored signature data and stored biometric data respectively for identification verification.

25 34. A method as in claim 32 wherein said transmitting the transaction data step comprises the steps of:

transmitting data within the remote locations;

30 transmitting data from each remote location to a corresponding central location; and

transmitting data within the central locations.

35 35. A method as in claim 34 wherein said transmitting data from each remote location to a

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corresponding central location step comprises the steps of:

5 connecting each remote location to a corresponding central location; and

connecting each central location to corresponding remote locations.

10 36. A method as in claim 29 further comprising the steps of:

collecting and sending the electronic or paper transaction data at intermediate locations;

15 managing the collecting and sending of the transaction data; and

20 transmitting the transaction data within the intermediate location and between the intermediate locations and the remote locations and the central locations.

25 37. A method as in claim 36 wherein said managing the collecting and sending step comprises the steps of:

polling the remote locations for transaction data with servers in the intermediate locations;

30 storing the transaction data in the intermediate locations in a useful form, said storing maintains the transaction data in a primary memory of a memory hierarchy and performs backup storage of the transaction data into a secondary memory of the memory hierarchy; and

35 dynamically assigning the servers to receive portions of the transaction data for balancing the transaction data among the servers.

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38. The method as in claim 36 wherein said transmitting the transaction data step comprises the steps of:

- 5 transmitting data within the remote locations;
- transmitting data from each remote location to a corresponding intermediate location;
- transmitting data within the intermediate locations;
- 10 transmitting data from each intermediate location to corresponding central locations; and
- transmitting data within the central locations.

15 39. A method as in claim 38 wherein said transmitting data from each remote location to corresponding intermediate locations step comprises the steps of:

- 20 connecting each remote location to a corresponding intermediate location; and
- connecting the intermediate locations to corresponding remote locations.

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40. A method as in claim 38 wherein said transmitting data from each intermediate location to corresponding central locations comprises the steps of:

- 30 connecting each intermediate location to an external communication network; and
- connecting the corresponding central locations to the communication network.

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41. A method as in claim 40 wherein said transmitting data from each intermediate location to corresponding central locations step further comprises the steps of:

- 5 packaging the transaction data into frames; and
- transmitting the frames through the external communication network.

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42. A communication network for the transmission of data within and between one or more remote subsystems, at least one intermediate subsystem and at least one central subsystem forming a tiered architecture wherein each of

15 said at least one central data processing subsystem communicate with a corresponding some of said at least one data collecting subsystem and each of said at least one data collecting subsystem communicate with a corresponding some of said one or more data processing

20 subsystems comprising:

 at least one first local area network for transmitting data within a corresponding one of said one or more remote subsystems;

- 25 at least one second local area network for transmitting data within a corresponding one of said at least one intermediate subsystem;

- at least one third local area network for transmitting data within a corresponding one of said at
- 30 least one central subsystem; and

- at least one wide area network for transmitting data between said one or more remote subsystems, said at least one intermediate subsystem and said at least one central
- 35 subsystem.

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43. A communication network as in claim 42 further comprising:

at least one first modem for connecting said at least one first local area network of said one or more remote subsystems to a corresponding one of said at least one second local area network through said at least one wide area network;

at least one bank of modems for connecting said at least one second local area network of said at least one intermediate subsystem to a corresponding one of said at least one first local area network of said one or more remote subsystems through said at least one wide area network;

at least one first wide area network router for connecting a corresponding one of said at least one second local area network of said at least one intermediate subsystem to said at least one wide area network; and

at least one second wide area network router for connecting a corresponding one of said at least one third local area network of said at least one central subsystem to said at least one wide area network.

44. A system as in claim 43 wherein said at least one first wide area network and said at least one second wide area network comprises a carrier cloud which utilizes a frame relay method for transmitting the transaction data.

45. A system as in claim 44 wherein said at least one second local area network and said at least one third local area network further comprises a corresponding one of at least one network switch for routing transaction

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data within said at least one second local area network and said at least one third local area network; and further wherein said data comprises (a) electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, or (b) paper transactions from documents and receipts.

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46. A method for transmitting data within and
10 between one or more remote subsystems, at least one intermediate subsystem and at least one central subsystem in a tiered manner wherein each of the central subsystems communicate with a corresponding some of the intermediate subsystems and each of the intermediate subsystems
15 communicate with a corresponding some of the remote subsystems comprising the steps of:

transmitting data within the remote locations;

transmitting data from each remote location to a
20 corresponding intermediate location;

transmitting data within the intermediate locations;

transmitting data from each intermediate location to corresponding central locations; and

25 transmitting data within the central locations.

47. A method as in claim 46 wherein said
30 transmitting data from each remote location to corresponding intermediate locations step comprises the steps of:

connecting each remote location to a corresponding intermediate location; and

35 connecting the intermediate locations to corresponding remote locations.

48. A method as in claim 47 wherein said transmitting data from each intermediate location to corresponding central locations comprises the steps of:

5 connecting each intermediate location to an external communication network; and

connecting the corresponding central locations to the external communication network.

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49. A method as in claim 48 wherein said transmitting data from each intermediate location to corresponding central locations step further comprises the steps of:

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packaging the transaction data into frames; and

transmitting the frames through the external communication network.

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50. A method as in claim 46 wherein said data is obtained from (a) electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, or (b) paper transactions from documents
25 and receipts.

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